



ecology and environment, inc.

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MEMORANDUM

DATE: January 21, 2004

TO: Renee Nordeen, Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-Chemist, E & E, Seattle, WA *MW*

SUBJ: Inorganic Data Quality Summary Check, Gorst Creek-Bremerton Auto
Wrecking Integrated Assessment, Bremerton, Washington

REF: TDD: 03-07-0009 PAN: 001281.0291.01IA

The data quality assurance summary check of 17 soil/sediment samples collected from the Gorst Creek-Bremerton Auto Wrecking site in Bremerton, Washington, has been completed. Target Analyte List (TAL) metals analyses (EPA CLP SOW ILM04.1) were performed by the Chemtech Consulting Group of Mountainside, New Jersey.

The samples were numbered:

| | | | | |
|--------|--------|--------|--------|--------|
| MJ2793 | MJ2794 | MJ2796 | MJ2797 | MJ2799 |
| MJ27A0 | MJ27A1 | MJ27A2 | MJ27A3 | MJ27A4 |
| MJ27A5 | MJ27A6 | MJ27A7 | MJ27A8 | MJ27A9 |
| MJ27B2 | MJ27B5 | | | |

The secondary reviewer added the (J) qualifier to sample results (B) that were only qualified based on concentration. The (JB) qualifiers were placed in the "Q" column of the Form I for clarity.

Sample results qualified (B) by the laboratory to indicate a result less than the contract required quantitation limit but greater than the instrument detection limit that also had additional data or bias qualifiers applied by the EPA validator were changed to (JB) by the secondary reviewer for clarity. All results qualified (B) by the laboratory are considered non-detect for Hazard Ranking System purposes.

No validation discrepancies were noted.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

1200 Sixth Avenue
Seattle, Washington 98101

January 14, 2004

Reply To
Attn. Of: OEA-095

MEMORANDUM

SUBJECT: Data Validation for Gorst Creek PA/SI,
Case# 32364, SDG: MJ27A0, Inorganic Analyses

FROM: Donald Matheny, Senior Chemist *DM*
Technical Support Unit, OEA

TO: Joanne LaBaw, Site Assessment Manager
Office of Environmental Cleanup

CC: Bruce Woods, Region 10 CLP TPO

The data validation of inorganic analyses for the above sample set is complete. 17 soil/sediment samples were analyzed for metals by the Chemtech Consulting Group, Mountainside, New Jersey. Sample numbers for this delivery group are as follows:

| | | | | |
|--------|--------|--------|--------|--------|
| MJ2793 | MJ2794 | MJ2796 | MJ2797 | MJ2799 |
| MJ27A0 | MJ27A1 | MJ27A2 | MJ27A3 | MJ27A4 |
| MJ27A5 | MJ27A6 | MJ27A7 | MJ27A8 | MJ27A9 |
| MJ27B2 | MJ27B5 | | | |

DATA QUALIFICATIONS

The following comments refer to Chemtech's performance in meeting quality control specifications outlined in the "CLP Statement of Work (CLP-SOW) for Inorganic Analysis, rev. ILM04.1", the "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA-540/R-94-013" and the judgement of the reviewer. The comments presented herein are based on the information provided for the review.

1.0 TIMELINESS - Acceptable

The holding time from the date of collection to the date of digestion and analyses were met for all metals (metals 180 days, mercury 28 days). Samples were collected on 11/11/03 and 11/12/03. ICP-AES analysis was conducted on 11/24/03 and mercury on 11/21/03.

2.0 INSTRUMENT CALIBRATION/VERIFICATION - Acceptable

For ICP-AES analysis, instrument calibration was performed in accordance with method requirements. Recoveries for instrument verification standards (96-106%) met the frequency (10%) and recovery (90-110%) criteria.

For mercury analysis, the instrument was calibrated with a blank and five standards. The correlation coefficient (0.999) met the criterion (≥ 0.995). Recoveries for verification standards (86-101%) met the frequency (10%) and recovery (80-120%) criteria.

Quantitation verification standards met both the frequency and recovery criteria for all analytes.

3.0 ICP-AES INTERFERENCE CHECK SAMPLE (ICS) - Acceptable

An ICS was analyzed at the beginning and end of each analytical run. ICS recoveries (84-116%) met the recovery criterion (80-120%) for all metals.

4.0 LABORATORY CONTROL SAMPLES (LCS) - Acceptable

All metals recoveries for the LCS were within the established control limits for soils.

5.0 BLANKS - Acceptable

Preparation and instrument control blanks were prepared and analyzed in accordance with method requirements. Blank results were either non-detected or below a factor that could impact analytical sample results for all elements.

6.0 MATRIX SPIKE ANALYSIS

A matrix spike analysis was performed for sample MJ27B2. Percent recoveries (84-121%) met the recovery criterion (75-125%) with the exception of antimony (74%), manganese (72%), selenium (73%) and silver (71%). Data values for these elements were qualified "J" or "UJ" with a low bias.

7.0 DUPLICATE SAMPLE ANALYSIS - Acceptable

A duplicate sample analysis was performed for sample MJ27B2. Relative percent differences were within $\pm 35\%$ or $\pm 2 \times \text{CRDL}$.

8.0 ICP-AES SERIAL DILUTION

A five-fold serial dilution was performed for sample MJ27B2. Percent differences were within the control criterion ($\leq 10\%$) with the exception of copper (12%). Copper values were qualified "J" and may be biased high.

9.0 ASSESSMENT SUMMARY

The following is a summary of qualified data: The (J) qualifier applied by the laboratory, represents results that are estimated. These values fall within a concentration range that is above the method detection limit but below the laboratory's quantitation limit. Antimony, manganese, selenium and silver values were qualified "J" or "UJ" due to low recoveries in the matrix spike. Antimony, manganese, selenium and silver values may be biased low. Copper values were qualified "J" due to uncertainties associated with the serial dilution. Copper values may be biased high.

DATA QUALIFIERS

- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- J - The associated value is an estimated quantity.
- R - The data are unusable. The analyte may or may not be present in the sample.
- UJ - The analyte was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise.

PROJECT SPECIFIC DATA QUALIFIERS:

- L - Low bias.
- H - High bias.
- K - Unknown Bias.

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ2793

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-WO-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-01

Level (low/med): LOW Date Received: 11/15/03

% Solids: 80.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|------|----|
| 7429-90-5 | Aluminum | 5240 | - | - | P |
| 7440-36-0 | Antimony | 2.2 | U | XUSL | P |
| 7440-38-2 | Arsenic | 1.4 | U | - | P |
| 7440-39-3 | Barium | 36.1 | A | JB | P |
| 7440-41-7 | Beryllium | 0.12 | R | JB | P |
| 7440-43-9 | Cadmium | 0.17 | U | - | P |
| 7440-70-2 | Calcium | 1400 | - | - | P |
| 7440-47-3 | Chromium | 11.2 | - | - | P |
| 7440-48-4 | Cobalt | 5.6 | A | JB | P |
| 7440-50-8 | Copper | 7.1 | - | ZTH | P |
| 7439-89-6 | Iron | 9080 | - | - | P |
| 7439-92-1 | Lead | 4.5 | - | - | P |
| 7439-95-4 | Magnesium | 2000 | - | - | P |
| 7439-96-5 | Manganese | 347 | - | XJL | P |
| 7439-97-6 | Mercury | 0.12 | U | - | CV |
| 7440-02-0 | Nickel | 19.4 | - | - | P |
| 7440-09-7 | Potassium | 118 | R | JB | P |
| 7782-49-2 | Selenium | 0.92 | U | XUJL | P |
| 7440-22-4 | Silver | 0.34 | U | XUJL | P |
| 7440-23-5 | Sodium | 114 | U | - | P |
| 7440-28-0 | Thallium | 1.6 | U | - | P |
| 7440-62-2 | Vanadium | 22.0 | - | - | P |
| 7440-66-6 | Zinc | 33.3 | - | - | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000004

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ2794

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-WO-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-02

Level (low/med): LOW Date Received: 11/15/03

% Solids: 77.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|------|----|
| 7429-90-5 | Aluminum | 8230 | - | | P |
| 7440-36-0 | Antimony | 2.3 | U | XUJL | P |
| 7440-38-2 | Arsenic | 2.3 | U | JB | P |
| 7440-39-3 | Barium | 51.5 | | | P |
| 7440-41-7 | Beryllium | 0.20 | U | JB | P |
| 7440-43-9 | Cadmium | 0.18 | U | | P |
| 7440-70-2 | Calcium | 1700 | | | P |
| 7440-47-3 | Chromium | 17.3 | | | P |
| 7440-48-4 | Cobalt | 9.0 | U | JB | P |
| 7440-50-8 | Copper | 9.9 | | ZSH | P |
| 7439-89-6 | Iron | 14900 | | | P |
| 7439-92-1 | Lead | 5.3 | | | P |
| 7439-95-4 | Magnesium | 3910 | | | P |
| 7439-96-5 | Manganese | 506 | | XJL | P |
| 7439-97-6 | Mercury | 0.12 | U | | CV |
| 7440-02-0 | Nickel | 36.4 | | | P |
| 7440-09-7 | Potassium | 181 | U | JB | P |
| 7782-49-2 | Selenium | 0.96 | U | XUJL | P |
| 7440-22-4 | Silver | 0.36 | U | XUJL | P |
| 7440-23-5 | Sodium | 119 | U | | P |
| 7440-28-0 | Thallium | 1.7 | U | | P |
| 7440-62-2 | Vanadium | 38.2 | | | P |
| 7440-66-6 | Zinc | 44.1 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000005

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-WO-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-03

Level (low/med): LOW Date Received: 11/15/03

% Solids: 68.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|------|----|
| 7429-90-5 | Aluminum | 11700 | | | P |
| 7440-36-0 | Antimony | 2.7 | U | XUJL | P |
| 7440-38-2 | Arsenic | 2.9 | | | P |
| 7440-39-3 | Barium | 79.2 | | | P |
| 7440-41-7 | Beryllium | 0.26 | U | JB | P |
| 7440-43-9 | Cadmium | 0.20 | U | | P |
| 7440-70-2 | Calcium | 1820 | | | P |
| 7440-47-3 | Chromium | 45.5 | | | P |
| 7440-48-4 | Cobalt | 14.2 | U | JB | P |
| 7440-50-8 | Copper | 11.5 | | ZIM | P |
| 7439-89-6 | Iron | 16500 | | | P |
| 7439-92-1 | Lead | 8.4 | | | P |
| 7439-95-4 | Magnesium | 3240 | | | P |
| 7439-96-5 | Manganese | 801 | | XJL | P |
| 7439-97-6 | Mercury | 0.13 | U | | CV |
| 7440-02-0 | Nickel | 90.0 | | | P |
| 7440-09-7 | Potassium | 209 | U | JB | P |
| 7782-49-2 | Selenium | 1.1 | U | XUJL | P |
| 7440-22-4 | Silver | 0.41 | U | XUJL | P |
| 7440-23-5 | Sodium | 136 | U | | P |
| 7440-28-0 | Thallium | 2.0 | U | | P |
| 7440-62-2 | Vanadium | 40.2 | | | P |
| 7440-66-6 | Zinc | 43.7 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000006

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ2797

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-WO-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-04

Level (low/med): LOW Date Received: 11/15/03

% Solids: 88.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|----|----|
| 7429-90-5 | Aluminum | 6560 | - | - | P |
| 7440-36-0 | Antimony | 3.8 | P | PP | P |
| 7440-38-2 | Arsenic | 1.3 | U | - | P |
| 7440-39-3 | Barium | 51.1 | - | - | P |
| 7440-41-7 | Beryllium | 0.14 | P | JB | P |
| 7440-43-9 | Cadmium | 0.37 | P | JB | P |
| 7440-70-2 | Calcium | 1860 | P | JB | P |
| 7440-47-3 | Chromium | 17.0 | - | - | P |
| 7440-48-4 | Cobalt | 5.9 | P | JB | P |
| 7440-50-8 | Copper | 201 | P | JB | P |
| 7439-89-6 | Iron | 10400 | - | - | P |
| 7439-92-1 | Lead | 47.3 | - | - | P |
| 7439-95-4 | Magnesium | 2780 | - | - | P |
| 7439-96-5 | Manganese | 205 | - | TL | P |
| 7439-97-6 | Mercury | 0.11 | U | - | CV |
| 7440-02-0 | Nickel | 29.5 | - | - | P |
| 7440-09-7 | Potassium | 228 | P | JB | P |
| 7782-49-2 | Selenium | 0.85 | U | TL | P |
| 7440-22-4 | Silver | 0.31 | U | TL | P |
| 7440-23-5 | Sodium | 112 | P | JB | P |
| 7440-28-0 | Thallium | 1.5 | U | - | P |
| 7440-62-2 | Vanadium | 19.6 | - | - | P |
| 7440-66-6 | Zinc | 159 | - | - | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000007

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-WO-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-05

Level (low/med): LOW Date Received: 11/15/03

% Solids: 75.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|------|----|
| 7429-90-5 | Aluminum | 7440 | | P | |
| 7440-36-0 | Antimony | 3.3 | B | X SW | P |
| 7440-38-2 | Arsenic | 1.5 | U | | P |
| 7440-39-3 | Barium | 59.3 | | | P |
| 7440-41-7 | Beryllium | 0.17 | B | | P |
| 7440-43-9 | Cadmium | 0.65 | B | JB | P |
| 7440-70-2 | Calcium | 1970 | | JB | P |
| 7440-47-3 | Chromium | 14.1 | | | P |
| 7440-48-4 | Cobalt | 6.1 | A | JB | P |
| 7440-50-8 | Copper | 26.5 | | JB | P |
| 7439-89-6 | Iron | 9040 | | | P |
| 7439-92-1 | Lead | 47.0 | | | P |
| 7439-95-4 | Magnesium | 2460 | | | P |
| 7439-96-5 | Manganese | 333 | | X JL | P |
| 7439-97-6 | Mercury | 0.12 | U | | CV |
| 7440-02-0 | Nickel | 24.4 | | | P |
| 7440-09-7 | Potassium | 208 | | JB | P |
| 7782-49-2 | Selenium | 1.0 | U | X JL | P |
| 7440-22-4 | Silver | 0.37 | U | X JL | P |
| 7440-23-5 | Sodium | 124 | U | | P |
| 7440-28-0 | Thallium | 1.8 | U | | P |
| 7440-62-2 | Vanadium | 19.1 | | | P |
| 7440-66-6 | Zinc | 153 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000008

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ27A0

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-WO-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-06

Level (low/med): LOW Date Received: 11/15/03

% Solids: 82.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|------|----|
| 7429-90-5 | Aluminum | 6700 | - | - | P |
| 7440-36-0 | Antimony | 2.2 | U | XUJL | P |
| 7440-38-2 | Arsenic | 2.6 | | | P |
| 7440-39-3 | Barium | 48.0 | JB | JB | P |
| 7440-41-7 | Beryllium | 0.12 | JB | JB | P |
| 7440-43-9 | Cadmium | 0.43 | JB | JB | P |
| 7440-70-2 | Calcium | 4440 | | JB | P |
| 7440-47-3 | Chromium | 17.7 | | | P |
| 7440-48-4 | Cobalt | 6.4 | | JB | P |
| 7440-50-8 | Copper | 26.5 | | #JH | P |
| 7439-89-6 | Iron | 9290 | | | P |
| 7439-92-1 | Lead | 79.9 | | | P |
| 7439-95-4 | Magnesium | 2910 | | | P |
| 7439-96-5 | Manganese | 167 | | XJL | P |
| 7439-97-6 | Mercury | 0.11 | U | | CV |
| 7440-02-0 | Nickel | 20.5 | | | P |
| 7440-09-7 | Potassium | 287 | | JB | P |
| 7782-49-2 | Selenium | 0.92 | U | XUJL | P |
| 7440-22-4 | Silver | 0.34 | U | XUJL | P |
| 7440-23-5 | Sodium | 151 | JB | JB | P |
| 7440-28-0 | Thallium | 1.6 | U | | P |
| 7440-62-2 | Vanadium | 20.4 | | | P |
| 7440-66-6 | Zinc | 88.5 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000009

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ27A1

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-W0-0089

Lab Code: CHEM Case No.: 32364 SAS No.:

SDG No.: MJ27A0

Matrix (soil/water): SOIL

Lab Sample ID: R5088-07

Level (low/med): LOW

Date Received: 11/15/03

% Solids: 85.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|-----|----|
| 7429-90-5 | Aluminum | 7510 | | | P |
| 7440-36-0 | Antimony | 2.4 | S | XJH | P |
| 7440-38-2 | Arsenic | 5.8 | | | P |
| 7440-39-3 | Barium | 72.6 | | | P |
| 7440-41-7 | Beryllium | 0.16 | B | JB | P |
| 7440-43-9 | Cadmium | 0.20 | A | JB | P |
| 7440-70-2 | Calcium | 5350 | | | P |
| 7440-47-3 | Chromium | 19.9 | | | P |
| 7440-48-4 | Cobalt | 8.0 | A | JB | P |
| 7440-50-8 | Copper | 33.3 | | ZJH | P |
| 7439-89-6 | Iron | 17700 | | | P |
| 7439-92-1 | Lead | 94.4 | | | P |
| 7439-95-4 | Magnesium | 3470 | | | P |
| 7439-96-5 | Manganese | 236 | | XJL | P |
| 7439-97-6 | Mercury | 0.12 | U | | CV |
| 7440-02-0 | Nickel | 25.9 | | | P |
| 7440-09-7 | Potassium | 472 | A | JB | P |
| 7782-49-2 | Selenium | 0.89 | U | XJL | P |
| 7440-22-4 | Silver | 0.33 | U | XJL | P |
| 7440-23-5 | Sodium | 139 | A | JB | P |
| 7440-28-0 | Thallium | 1.6 | U | | P |
| 7440-62-2 | Vanadium | 27.9 | | | P |
| 7440-66-6 | Zinc | 176 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000010

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ27A2

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-W0-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-08

Level (low/med): LOW Date Received: 11/15/03

% Solids: 89.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|--------|----|
| 7429-90-5 | Aluminum | 9840 | - | | P |
| 7440-36-0 | Antimony | 9.1 | B | X JL P | P |
| 7440-38-2 | Arsenic | 24.2 | | | P |
| 7440-39-3 | Barium | 79.0 | | | P |
| 7440-41-7 | Beryllium | 0.20 | B | | P |
| 7440-43-9 | Cadmium | 0.16 | U | | P |
| 7440-70-2 | Calcium | 28700 | | | P |
| 7440-47-3 | Chromium | 21.4 | | | P |
| 7440-48-4 | Cobalt | 9.1 | | X JL | P |
| 7440-50-8 | Copper | 27.9 | | X JL H | P |
| 7439-89-6 | Iron | 13800 | | | P |
| 7439-92-1 | Lead | 98.2 | | | P |
| 7439-95-4 | Magnesium | 3300 | | | P |
| 7439-96-5 | Manganese | 182 | | X JL | P |
| 7439-97-6 | Mercury | 0.11 | U | | CV |
| 7440-02-0 | Nickel | 25.0 | | | P |
| 7440-09-7 | Potassium | 486 | | X JL | P |
| 7782-49-2 | Selenium | 0.85 | U | X JL | P |
| 7440-22-4 | Silver | 0.31 | U | X JL | P |
| 7440-23-5 | Sodium | 317 | B | X JL | P |
| 7440-28-0 | Thallium | 1.5 | U | | P |
| 7440-62-2 | Vanadium | 24.3 | | | P |
| 7440-66-6 | Zinc | 209 | | | NR |
| | Cyanide | | | | |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000011

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ27A3

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-W0-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-09

Level (low/med): LOW Date Received: 11/15/03

% Solids: 91.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|-------|----|
| 7429-90-5 | Aluminum | 9190 | | | P |
| 7440-36-0 | Antimony | 2.0 | U | X-UJL | P |
| 7440-38-2 | Arsenic | 1.2 | U | | P |
| 7440-39-3 | Barium | 52.6 | | | P |
| 7440-41-7 | Beryllium | 0.20 | B | JB | P |
| 7440-43-9 | Cadmium | 0.15 | U | | P |
| 7440-70-2 | Calcium | 2250 | | | P |
| 7440-47-3 | Chromium | 19.9 | | | P |
| 7440-48-4 | Cobalt | 7.6 | A | JB | P |
| 7440-50-8 | Copper | 11.9 | | ZTH | P |
| 7439-89-6 | Iron | 10400 | | | P |
| 7439-92-1 | Lead | 2.7 | | | P |
| 7439-95-4 | Magnesium | 3290 | | | P |
| 7439-96-5 | Manganese | 112 | | X JL | P |
| 7439-97-6 | Mercury | 0.11 | U | | CV |
| 7440-02-0 | Nickel | 29.3 | | | P |
| 7440-09-7 | Potassium | 269 | A | JB | P |
| 7782-49-2 | Selenium | 0.81 | U | X-UJL | P |
| 7440-22-4 | Silver | 0.30 | U | X-UJL | P |
| 7440-23-5 | Sodium | 101 | U | | P |
| 7440-28-0 | Thallium | 1.5 | U | | P |
| 7440-62-2 | Vanadium | 26.0 | | | P |
| 7440-66-6 | Zinc | 26.1 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000012

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ27A4

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-WO-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-10

Level (low/med): LOW Date Received: 11/15/03

% Solids: 92.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|------|----|
| 7429-90-5 | Aluminum | 7830 | - | - | P |
| 7440-36-0 | Antimony | 1.9 | U | XUJL | P |
| 7440-38-2 | Arsenic | 1.2 | U | - | P |
| 7440-39-3 | Barium | 46.7 | - | - | P |
| 7440-41-7 | Beryllium | 0.18 | JB | JB | P |
| 7440-43-9 | Cadmium | 0.15 | U | - | P |
| 7440-70-2 | Calcium | 2180 | - | - | P |
| 7440-47-3 | Chromium | 15.7 | - | - | P |
| 7440-48-4 | Cobalt | 6.9 | JB | JB | P |
| 7440-50-8 | Copper | 11.8 | - | JB | P |
| 7439-89-6 | Iron | 10000 | - | - | P |
| 7439-92-1 | Lead | 2.4 | - | - | P |
| 7439-95-4 | Magnesium | 2900 | - | - | P |
| 7439-96-5 | Manganese | 132 | - | XJL | P |
| 7439-97-6 | Mercury | 0.10 | U | - | CV |
| 7440-02-0 | Nickel | 24.8 | - | - | P |
| 7440-09-7 | Potassium | 262 | JB | JB | P |
| 7782-49-2 | Selenium | 0.79 | U | XUJL | P |
| 7440-22-4 | Silver | 0.29 | U | XUJL | P |
| 7440-23-5 | Sodium | 98.2 | U | - | P |
| 7440-28-0 | Thallium | 1.4 | U | - | P |
| 7440-62-2 | Vanadium | 24.8 | - | - | P |
| 7440-66-6 | Zinc | 22.9 | - | - | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

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1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ27A5

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-WO-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-11

Level (low/med): LOW Date Received: 11/15/03

% Solids: 88.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|------|----|
| 7429-90-5 | Aluminum | 8150 | | | P |
| 7440-36-0 | Antimony | 2.0 | U | XUSL | P |
| 7440-38-2 | Arsenic | 1.3 | U | | P |
| 7440-39-3 | Barium | 52.1 | | | P |
| 7440-41-7 | Beryllium | 0.21 | JB | | P |
| 7440-43-9 | Cadmium | 0.15 | U | | P |
| 7440-70-2 | Calcium | 2090 | | | P |
| 7440-47-3 | Chromium | 15.1 | | JB | P |
| 7440-48-4 | Cobalt | 7.2 | | JB | P |
| 7440-50-8 | Copper | 11.2 | | EJH | P |
| 7439-89-6 | Iron | 9150 | | | P |
| 7439-92-1 | Lead | 2.5 | | | P |
| 7439-95-4 | Magnesium | 3100 | | | P |
| 7439-96-5 | Manganese | 142 | | XJL | P |
| 7439-97-6 | Mercury | 0.11 | U | | CV |
| 7440-02-0 | Nickel | 24.9 | | | P |
| 7440-09-7 | Potassium | 291 | | JB | P |
| 7782-49-2 | Selenium | 0.83 | U | XUJL | P |
| 7440-22-4 | Silver | 0.31 | U | XUSL | P |
| 7440-23-5 | Sodium | 225 | JB | | P |
| 7440-28-0 | Thallium | 1.5 | U | JB | P |
| 7440-62-2 | Vanadium | 20.0 | | | P |
| 7440-66-6 | Zinc | 22.8 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000014

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ27A6

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-WO-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-12

Level (low/med): LOW Date Received: 11/15/03

% Solids: 86.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|------|----|
| 7429-90-5 | Aluminum | 5850 | - | XUJL | P |
| 7440-36-0 | Antimony | 2.1 | U | XUJL | P |
| 7440-38-2 | Arsenic | 3.3 | | | P |
| 7440-39-3 | Barium | 29.7 | B | JB | P |
| 7440-41-7 | Beryllium | 0.13 | B | JB | P |
| 7440-43-9 | Cadmium | 0.21 | B | JB | P |
| 7440-70-2 | Calcium | 2480 | | | P |
| 7440-47-3 | Chromium | 13.7 | | | P |
| 7440-48-4 | Cobalt | 5.7 | B | JB | P |
| 7440-50-8 | Copper | 14.8 | | ZTH | P |
| 7439-89-6 | Iron | 8370 | | | P |
| 7439-92-1 | Lead | 16.2 | | | P |
| 7439-95-4 | Magnesium | 2530 | | | P |
| 7439-96-5 | Manganese | 134 | | XJL | P |
| 7439-97-6 | Mercury | 0.19 | UV | | CV |
| 7440-02-0 | Nickel | 19.4 | | | P |
| 7440-09-7 | Potassium | 213 | B | JB | P |
| 7782-49-2 | Selenium | 0.88 | U | XUJL | P |
| 7440-22-4 | Silver | 0.33 | U | XUJL | P |
| 7440-23-5 | Sodium | 109 | U | | P |
| 7440-28-0 | Thallium | 1.6 | U | | P |
| 7440-62-2 | Vanadium | 18.8 | | | P |
| 7440-66-6 | Zinc | 60.3 | | | NR |
| | Cyanide | | | | |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000015

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ27A7

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-W0-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-13

Level (low/med): LOW Date Received: 11/15/03

% Solids: 81.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M | |
|-----------|-----------|---------------|---|------|----|----|
| 7429-90-5 | Aluminum | 8060 | | | P | |
| 7440-36-0 | Antimony | 4.3 | B | X SH | P | JB |
| 7440-38-2 | Arsenic | 8.3 | | | P | |
| 7440-39-3 | Barium | 266 | | | P | |
| 7440-41-7 | Beryllium | 0.23 | B | JB | P | |
| 7440-43-9 | Cadmium | 0.77 | B | JB | P | |
| 7440-70-2 | Calcium | 13200 | | | P | |
| 7440-47-3 | Chromium | 25.9 | | | P | |
| 7440-48-4 | Cobalt | 6.7 | B | JB | P | |
| 7440-50-8 | Copper | 61.3 | | X SH | P | |
| 7439-89-6 | Iron | 12100 | | | P | |
| 7439-92-1 | Lead | 1410 | | | P | |
| 7439-95-4 | Magnesium | 2660 | | | P | |
| 7439-96-5 | Manganese | 223 | | X JL | P | |
| 7439-97-6 | Mercury | 0.36 | W | | CV | |
| 7440-02-0 | Nickel | 22.5 | | | P | |
| 7440-09-7 | Potassium | 278 | A | JB | P | |
| 7782-49-2 | Selenium | 0.92 | U | X JL | P | |
| 7440-22-4 | Silver | 0.34 | U | X JL | P | |
| 7440-23-5 | Sodium | 142 | B | JB | P | |
| 7440-28-0 | Thallium | 1.6 | U | | P | |
| 7440-62-2 | Vanadium | 25.9 | | | P | |
| 7440-66-6 | Zinc | 470 | | | P | NR |
| | Cyanide | | | | | |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000016

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ27A8

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-WO-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-14

Level (low/med): LOW Date Received: 11/15/03

% Solids: 86.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|------|----|
| 7429-90-5 | Aluminum | 7370 | | | P |
| 7440-36-0 | Antimony | 2.7 | B | X | P |
| 7440-38-2 | Arsenic | 4.2 | | | P |
| 7440-39-3 | Barium | 168 | | | P |
| 7440-41-7 | Beryllium | 0.25 | B | | P |
| 7440-43-9 | Cadmium | 0.62 | B | | P |
| 7440-70-2 | Calcium | 9860 | | | P |
| 7440-47-3 | Chromium | 20.0 | | | P |
| 7440-48-4 | Cobalt | 6.8 | A | JB | P |
| 7440-50-8 | Copper | 112 | A | JH | P |
| 7439-89-6 | Iron | 12200 | | | P |
| 7439-92-1 | Lead | 446 | | | P |
| 7439-95-4 | Magnesium | 2960 | | | P |
| 7439-96-5 | Manganese | 195 | | NJL | P |
| 7439-97-6 | Mercury | 0.52 | | | CV |
| 7440-02-0 | Nickel | 25.8 | | | P |
| 7440-09-7 | Potassium | 427 | A | JB | P |
| 7782-49-2 | Selenium | 0.86 | U | XNJL | P |
| 7440-22-4 | Silver | 0.32 | U | XNJL | P |
| 7440-23-5 | Sodium | 261 | A | JB | P |
| 7440-28-0 | Thallium | 1.5 | U | | P |
| 7440-62-2 | Vanadium | 23.7 | | | P |
| 7440-66-6 | Zinc | 278 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000017

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-W0-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-15

Level (low/med): LOW Date Received: 11/15/03

% Solids: 76.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|--------|----|
| 7429-90-5 | Aluminum | 9270 | | | P |
| 7440-36-0 | Antimony | 4.6 | B | X JMW | P |
| 7440-38-2 | Arsenic | 6.8 | | | P |
| 7440-39-3 | Barium | 180 | | | P |
| 7440-41-7 | Beryllium | 0.25 | A | JB | P |
| 7440-43-9 | Cadmium | 1.4 | | | P |
| 7440-70-2 | Calcium | 27900 | | | P |
| 7440-47-3 | Chromium | 51.5 | | | P |
| 7440-48-4 | Cobalt | 9.0 | A | JB | P |
| 7440-50-8 | Copper | 43.0 | | BTH | P |
| 7439-89-6 | Iron | 25900 | | | P |
| 7439-92-1 | Lead | 800 | | | P |
| 7439-95-4 | Magnesium | 3400 | | | P |
| 7439-96-5 | Manganese | 424 | | X JL | P |
| 7439-97-6 | Mercury | 1.1 | | | CV |
| 7440-02-0 | Nickel | 34.5 | | | P |
| 7440-09-7 | Potassium | 373 | A | JB | P |
| 7782-49-2 | Selenium | 0.99 | U | X U JL | P |
| 7440-22-4 | Silver | 0.37 | U | X U JL | P |
| 7440-23-5 | Sodium | 282 | A | JB | P |
| 7440-28-0 | Thallium | 1.8 | U | | P |
| 7440-62-2 | Vanadium | 30.2 | | | P |
| 7440-66-6 | Zinc | 1090 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000018

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ27B2

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-WO-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-16

Level (low/med): LOW Date Received: 11/15/03

% Solids: 91.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|------|----|
| 7429-90-5 | Aluminum | 11100 | - | - | P |
| 7440-36-0 | Antimony | 2.0 | U | XUJL | P |
| 7440-38-2 | Arsenic | 1.3 | U | - | P |
| 7440-39-3 | Barium | 69.4 | - | - | P |
| 7440-41-7 | Beryllium | 0.15 | U | JB | P |
| 7440-43-9 | Cadmium | 0.15 | U | - | P |
| 7440-70-2 | Calcium | 860 | U | JB | P |
| 7440-47-3 | Chromium | 14.4 | - | - | P |
| 7440-48-4 | Cobalt | 7.5 | U | JB | P |
| 7440-50-8 | Copper | 11.8 | - | ZJH | P |
| 7439-89-6 | Iron | 8990 | - | - | P |
| 7439-92-1 | Lead | 2.5 | - | - | P |
| 7439-95-4 | Magnesium | 2920 | - | - | P |
| 7439-96-5 | Manganese | 199 | - | XJL | P |
| 7439-97-6 | Mercury | 0.11 | U | - | CV |
| 7440-02-0 | Nickel | 24.6 | - | - | P |
| 7440-09-7 | Potassium | 250 | U | JB | P |
| 7782-49-2 | Selenium | 0.83 | U | XUJL | P |
| 7440-22-4 | Silver | 0.31 | U | XUJL | P |
| 7440-23-5 | Sodium | 103 | U | JB | P |
| 7440-28-0 | Thallium | 1.5 | U | - | P |
| 7440-62-2 | Vanadium | 24.0 | - | - | P |
| 7440-66-6 | Zinc | 22.0 | - | - | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Color After: YELLOW

Comments:

Clarity Before:

Clarity After:

Texture: MEDIUM

Artifacts:

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1-14-04

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJ27B5

Lab Name: CHEMTECH CONSULTING GROUP Contract: 68-W0-0089

Lab Code: CHEM Case No.: 32364 SAS No.: SDG No.: MJ27A0

Matrix (soil/water): SOIL Lab Sample ID: R5088-19

Level (low/med): LOW Date Received: 11/15/03

% Solids: 80.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|-----|------|----|
| 7429-90-5 | Aluminum | 5970 | | | P |
| 7440-36-0 | Antimony | 2.3 | U | XUJL | P |
| 7440-38-2 | Arsenic | 1.4 | U | | P |
| 7440-39-3 | Barium | 34.5 | AM | JB | P |
| 7440-41-7 | Beryllium | 0.12 | AM | JB | P |
| 7440-43-9 | Cadmium | 0.17 | U | | P |
| 7440-70-2 | Calcium | 1860 | | | P |
| 7440-47-3 | Chromium | 14.1 | | | P |
| 7440-48-4 | Cobalt | 5.4 | AM | JB | P |
| 7440-50-8 | Copper | 9.5 | ZTH | | P |
| 7439-89-6 | Iron | 8320 | | | P |
| 7439-92-1 | Lead | 2.7 | | | P |
| 7439-95-4 | Magnesium | 2480 | | | P |
| 7439-96-5 | Manganese | 139 | | XJL | P |
| 7439-97-6 | Mercury | 0.12 | U | | CV |
| 7440-02-0 | Nickel | 22.3 | | | P |
| 7440-09-7 | Potassium | 153 | AM | JB | P |
| 7782-49-2 | Selenium | 0.95 | U | XUJL | P |
| 7440-22-4 | Silver | 0.35 | U | XUJL | P |
| 7440-23-5 | Sodium | 117 | U | | P |
| 7440-28-0 | Thallium | 1.7 | U | | P |
| 7440-62-2 | Vanadium | 19.8 | | | P |
| 7440-66-6 | Zinc | 24.5 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After:

Artifacts:

Comments:

000020

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